

Amendments to the Specification:

Please replace the paragraph beginning at page 2, line 14, with the following rewritten paragraph:

In one design, the processing chamber, in which conventional plating or removal processing or ECMPR occurs, and the rinse chamber can be stacked vertically in a vertical process chambers arrangement. In this arrangement, the processing can be performed in a lower chamber, and the cleaning and drying can be carried out in an upper chamber after isolating the upper chamber from the lower chamber so that chemicals used in either chamber do not mix with each other. One such vertical chamber is disclosed in the co-pending U.S. Application Serial No. 09/466,014, now U.S. Patent No. 6,352,623 entitled "Vertically Configured Chamber Used for Multiple Processes", filed December 17, 1999, commonly owned by the assignee of the present invention.

Please replace the paragraph beginning at page 10, line 11, with the following rewritten paragraph:

The copper layer 102 may be deposited on the substrate 104 using an electroplating process and system 200 shown in Figure 5. The system 200 may be a vertical chamber system comprising a lower section 202 and an upper section 204. One such vertical chamber system is disclosed in the co-pending U.S. Application Serial No. 09/466,014, now U.S. Patent No. 6,352,623 entitled "Vertically Configured Chamber Used for Multiple Processes", filed December 17, 1999, commonly owned by the assignee of the present invention. Although the present invention is described using a vertical chamber system, it is for the purpose of exemplifying the present invention. Embodiments of the present invention can be used with other systems, such as systems having cleaning and process chambers that are not adjacent, as well as in chambers that perform other processes as described further herein. Accordingly, according to this embodiment, an edge copper removal process is performed within the upper chamber. Thus, while the lower chamber will comprise some type of processing section, such as an ECMPR, plating or material removal system, the upper section will contain a cleaning and edge copper removal and drying section. The upper and lower sections have a movable barrier, described in one specific embodiment as guard flaps, which keep the various materials and solutions used in the processes of the upper chamber from reaching the lower chamber, as described further herein.

Please replace the paragraph beginning at page 16, line 12, with the following rewritten paragraph:

During the electrochemical edge copper removal, the mild etching solution 230, depicted by the arrows in Figure 9, is applied on the edge copper of the wafer 100 while the wafer 100 is rotated at approximately 20 to 1000 rpm, preferably at 50 to 500 rpm. The mild etching solution is applied in the form of a well-regulated and continuous stream through the nozzle 232. Preferably, the stream of the mild etching solution may have a diameter of 0.5 mm to 2mm, preferably 1mm. Once the power is applied to the contact elements and the etching electrode or nozzle, edge copper 120 is electrochemically removed. As previously mentioned, during the removal due to both the surface tension of the removal solution and the rpm of the wafer, the solution wraps around the edge copper and etches the edge copper uniformly, rendering the edge region 101 of the wafer 100 shown in Figure 8. At ~~his~~ this point, the rpm of the wafer should be optimized to render the edge profile shown in Figure 8. If the rpm of the wafer is too high, the solution will not wrap around the edge and as a result the edge removal will not be successful. On the other hand, if the rpm is too low, the solution will extend more towards the center of the wafer and potentially result in thinning of the copper layer adjacent edge region 101, which is an unwanted situation.

Please replace the paragraph beginning at page 19, line 14, with the following rewritten paragraph:

As shown in Figure 11, in another embodiment, an edge copper removal apparatus 300 may comprise a rectangular 'U' shaped body having an upper arm portion 302 and a lower arm portion 304 connected to one another with a base portion 306. Solution inlet ports 307 are connected to the upper and lower arms to deliver a mild etching solution to a solution holding member 308 placed into the U-shaped body. The base portion 306 of the apparatus 300 contains an electrode 310, which is connected to a ~~positive~~ negative terminal of a power source 312. The holding member 308 is preferably a soft spongy material, which can be saturated with the mild solution delivered through the ports. When the holding member is pressed against the edge copper 120, it wraps around the edge copper and conveys the mild solution to the edge copper 120. At least one contact element 314, which is connected to a positive terminal of a power supply 310, may touch anywhere on the copper layer 102. The mild etching solution is applied on the edge copper 120 while the wafer 100 is rotated. As a result edge copper is etched from the edge of the wafer.